

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion is respectfully requested.

Claims 1-3, 5-15 and 17-18 are pending in the application; Claims 1-3, 5, 6, 10-15, 17 and 18 are amended; and Claims 4 and 16 are canceled without prejudice or disclaimer in the present amendment. Support for the amended claims can be found in the original specification, claims and drawings.<sup>1</sup> Thus, no new matter is presented.

In the outstanding Official Action, Figure 7 was objected to as not being labeled as “Prior Art”, because only that which is old is illustrated; Claims 1-3, 6 and 14 were objected to for failing to have proper antecedent basis; Claims 1-3, 6, 8, 9 and 14 were rejected under 35 U.S.C. § 102(b) as anticipated by Kojima et al. (U.S. Patent No. 6,181,854, hereinafter “Kojima”); Claim 11 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kojima; and Claim 7 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kojima in view of Naito (U.S. Patent No. 6,309,113, hereinafter “Naito”).

The undersigned appreciatively acknowledges the courtesy extended by Examiner Parekh by holding a personal interview with the undersigned on April 14, 2005. The substance of the interview is reflected in the amended claims, and in the arguments set forth below. No agreement was reached during the interview pending a formal response to the outstanding Official Action.

Figure 7 was objected to in the Official Action as not being labeled as “prior art”. In response, Figure 7 is labeled as “prior art” and a replacement sheet including Figure 7 is attached herewith. Accordingly, Applicants respectfully request that the objection to Figure 7 be withdrawn.

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<sup>1</sup> Specification at Figure 8.

Claims 1-3, 6 and 14 were objected to in the outstanding Official Action as failing to have proper antecedent basis for the phrase "said structure". Claims 1-3, 6 and 14 are amended to clarify this limitation and to correct any antecedent basis issues in the claims. Accordingly, Applicants respectfully request the objection to Claims 1-3, 6 and 14 as failing to have proper antecedent basis be withdrawn.

The specification is also amended to correct typographical errors. Specifically, at page 1, line 20 and page 3, lines 5 and 6, the letter "K" is replaced by "+-". As can be readily understood by one of ordinary skill in the art interpreting the context of the specification, the correction of the letter "K" is clearly an error and should read "+-", as amended. Accordingly, Applicants respectfully submit that these modifications to the specification do not introduce new matter.

Regarding the outstanding Restriction Requirement, Claims 4 and 16 are canceled, and Claims 10, 13 and 18 are amended to be directed to a semiconductor device/system, classified in class 257. Therefore, as all the pending claims are drawn to the same classification, Applicant's respectfully request that the Restriction Requirement be withdrawn and that all the pending Claims be examined on their merits.

In the outstanding Official Action, Claims 1, 2, 9 and 14 were rejected under 35 U.S.C. § 102(b) as anticipated by Kojima. Applicants respectfully submit that amended Claims 1 and 14 state novel features clearly not taught or rendered obvious by the applied reference.

Amended Claim 1 relates to an optical element mounted body which includes an optical semiconductor element having a light-emitting/light-receiving portion and a projection in the vicinity of an edge and/or along a V-groove marker on a primary surface thereof. A substrate is also provided which includes a mounting surface formed with a first hollow. The optical semiconductor element is mounted junction-down on the substrate such

that the projection of the optical semiconductor element and the first hollow of the substrate are positioned to oppose one another.

Specifically, amended Claim 1 recites, *inter alia*, an optical element mounted body comprising:

“...an optical semiconductor element having a light-emitting/light-receiving portion and a projection in the vicinity of an edge and/or along a V-groove marker on a primary surface thereof; and

a substrate having a mounting surface formed with a first hollow;

wherein said optical semiconductor element is mounted junction-down on said substrate such that said projection of said optical semiconductor element and said first hollow of said substrate are positioned to oppose one another.”

In an exemplary, non-limiting embodiment, the claimed structure allows for mitigation of the effects that the projection of the semiconductor element 5d may cause by creating a gap between the semiconductor laser element 5 and the mounting surface 4b of the mounting substrate 4 when the laser element 5 is mounted on the substrate junction-down.<sup>2</sup> If the semiconductor element 5 is not placed flat against the surface of the mounting surface, the device may suffer from poor performance due to poor heat dissipation, or the like. Thus, the hollow 4d is formed to receive the projection 5d allowing the semiconductor element 5 to be flush with the surface of the mounting surface.<sup>3</sup>

Turning to the applied reference, Kojima describes an optical module packaged with molded resin. Specifically, Kojima describes that a first groove (4) houses ferrule (8) to allow for interaction between a plurality of opto-electric conversion elements (12/14) and the optical fiber (10).<sup>4</sup>

However, Kojima fails to teach or suggest a semiconductor element having a light-emitting/light-receiving portion and a projection in the vicinity of an edge and/or along a V-

<sup>2</sup> Specification at Figure 2 and page 4, lines 17-21.

<sup>3</sup> Specification at page 8, lines 2-12.

<sup>4</sup> Kojima at col. 3, lines 33-48.

groove marker on a primary surface thereof, as recited in amended Claim 1. Kojima does describe that a plurality of opto-electrical elements (12/14) are provided in his device.<sup>5</sup> However, these devices (12/14) are shown to be placed on the mounting substrate (2) over a plurality of conductor patterns (16/18) and are shaped as continuous 3-dimensional rectangular structure, with no cut-outs or markings on the structure.<sup>6</sup> Kojima fails to teach or suggest a semiconductor element having a light-emitting/light-receiving portion and a **projection** in the vicinity of an edge and/or along **a V-groove marker** on a primary surface thereof, as recited in amended Claim 1. Specifically, Kojima fails to teach or suggest that the light emitting/receiving semiconductor elements (12/14) include any projections or V-grooves whatsoever.

Amended Claim 1 further recites a substrate having a mounting surface formed with a first hollow, wherein the optical semiconductor element is mounted junction-down on said substrate such that said projection of said optical semiconductor element and said first hollow of said substrate are positioned to oppose one another.

However, as discussed above, the light emitting/receiving semiconductor elements (12/14) of Kojima are mounted on the mounting substrate (2), which is a flat mounting surface including only conductor patterns (16/18).<sup>7</sup> Therefore, not only does Kojima fail to teach or suggest that the light emitting/receiving semiconductor elements (12/14) include projections, but Kojima further fails to teach or suggest that the mounting substrate (2) includes any hollows whatsoever to receive such projections, as recited in amended Claim 1.

Accordingly, Applicants respectfully request that the rejection of Claim 1 under 35 U.S.C. § 102(b) be withdrawn. As amended independent Claim 14 recites similar features as

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<sup>5</sup> Kojima at col. 3, lines 41-48.

<sup>6</sup> Kojima at Fig. 1.

<sup>7</sup> Kojima at Fig. 7.

amended Claim 1, Applicants respectfully submit that this claim also patentably defines over Kojima.

Claim 11 was rejected under 35 U.S.C. 103(a) as unpatentable over Kojima.

Specifically, the Examiner states that determination of shape parameters is a subject of routine experimentation.

Claim 11 is amended to recite that the first hollow described in the claim is "not less than 10  $\mu\text{m}$  in width, and not less than 5  $\mu\text{m}$  in depth". This shape is determined based on the natural phenomenon resulting in the creation of the projections, as recited in amended Claim 1, and as described in Page 10 of the specification. As stated above, Kojima does not disclose or suggest that a first hollow is formed whatsoever to receive projections formed on the semiconductor element. However, assuming that Kojima does describe a hollow in the mounting substrate (2), it would be clear that the depth of such a structure could not be determined from routine experimentation since Kojima fails to teach or suggest a projection formed on any light emitting/receiving semiconductor elements (12/14).

Accordingly, Applicants respectfully submit that the rejection of Claim 11, 35 U.S.C. 103(a) be withdrawn.

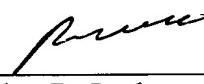
Claim 7 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kojima in view of Naito. As discussed above, Kojima fails to teach or suggest an optical semiconductor element having a light-emitting/light-receiving portion and a projection in the vicinity of an edge and/or along a V-groove marker and a substrate having a mounting surface formed with a first hollow; wherein the projection of said optical semiconductor element and said first hollow of said substrate are positioned to oppose one another. Likewise Naito does not remedy this deficiency, and therefore, none of the cited references either along or in combination disclose or suggest Applicants Claim 7 which includes these above-distinguished limitations by virtue of dependency.

Accordingly, Applicants respectfully request that the rejection of Claim 7 under 35 U.S.C. 103(a) be withdrawn.

Consequently, in view of the present amendment and in light of the foregoing comments, it is respectfully submitted that the invention defined by Claims 1-3, 5-15 and 17-18 are definite and patentably distinguishing over the applied references. The present application is therefore believed to be in condition for formal allowance and a favorable reconsideration of the application is therefore requested.

Respectfully submitted,

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IN THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 7. This sheet, which includes Fig. 7, replaces the original sheet including Fig. 7.

Attachment: Replacement Sheet (1)